

PROCEEDINGS
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BIOLOGICAL SOCIETY OF WASHINGTON

THE MONOGENEAN PARASITES OF AFRICAN FISHES.
IX. A NEW GENUS, *GUSSEVSTREMA*, RECOVERED
FROM THE GILLS OF *TERAPON JARBUA* (FORSKAL)
FROM SOUTH AFRICA¹

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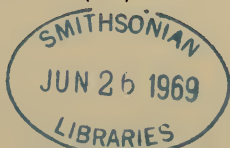
The monogenetic trematodes of African freshwater fishes have received considerable attention in recent years. In 1961 only four species of Monogenea had been described. At present approximately 60 species are known from the continent. This study is concerned with a new genus, *Gussevstrema*, recovered from the gills of *Terapon jarbua* (Forsk.) from the Republic of South Africa.

Host specimens were first frozen and then preserved in 3 percent formalin prior to shipment to the United States. Branchial materials and recovered parasites were then treated as prescribed by Price (1966) and measurements made as outlined by Price and McMahan (1967). Appropriate measurements and illustrations were made with the aid of a calibrated filar micrometer ocular and a camera lucida, respectively. Anatomical terms employed are those recommended by Hargis (1958) and by Price and Arai (1967). Average measurements are given first, followed by minimum and maximum values enclosed in parentheses. All measurements are expressed in microns.

***Gussevstrema* new genus**

Dactylogyridae, Ancyrocephalinae: Forms of moderate size, provided with a smooth cuticle. One pair of eyespots; comprising granules in anterior cephalic region. Cephalic lobes vestigial to lacking. Head organs

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(on either side) consist of four glandular structures connected to a larger pharyngeal gland. Haptor provided with two pairs of anchors. Bases of each anchor pair connected by a transverse haptoral bar, the bars connected to each other by multiple articulations; dorsal bar composed of three portions fused solidly together. Hooks 14 (seven pairs). Copulatory complex composed of a cirrus and a basally articulated accessory piece. Testis large, postovarian. Vagina and seminal receptacle not observed with certainty. Vitellaria exceptionally dense, composed of small granules. Intestinal limbs apparently confluent posteriorly.

***Gussevstrema amacleithrium* new genus, new species**

Host: *Terapon jarbua* (Forsk.).

Locality: Various bodies of water near Natal, South Africa.

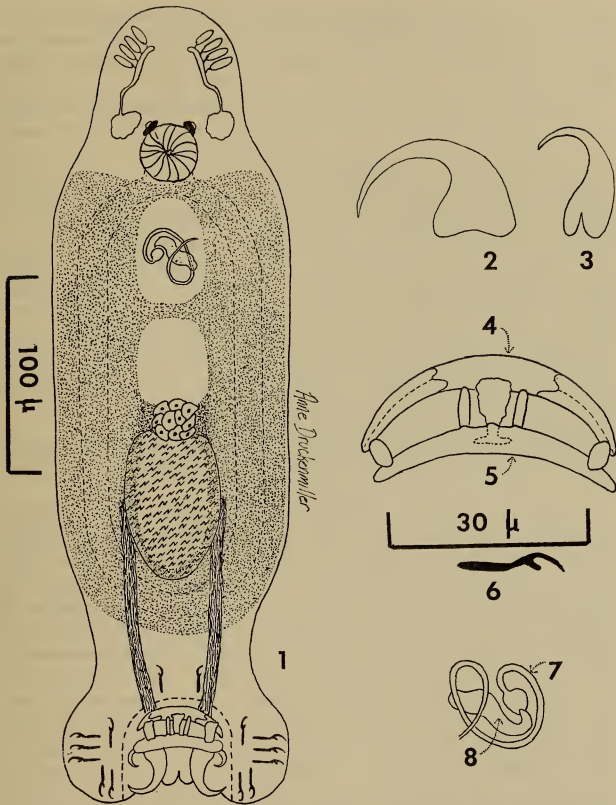
Location on host: Gill filaments.

Number of specimens studied: Three.

Holotype: USNM Helm. Coll. No. 71359.

Paratypes: In collection of senior author.

Description: A small dactylogyrid provided with a thin, smooth cuticle, length 385 (377–398); greatest width of body 124 (118–129). One pair of eyespots, each provided with a lens. A few eyespot granules scattered in anterior cephalic region. Cephalic lobes essentially lacking. Head organs (on either side) consist of four glandular structures all connected together by a fine duct; the duct continues posteriorly to terminate in a larger pharyngeal gland. Pharynx prominent, subspherical in dorsal view. Peduncle short and stout, setting the haptor well off from the body proper; haptor bilobed, with a small cleft in center of posterior border. Haptor apparently somewhat denser in central region, providing a differentiated site for attachment of anchors and bars. (Fig. 1, whole mount). Haptor provided with two pairs of anchors, one pair dorsal, the other ventral in position (Figs. 2, 3). Ventral anchors larger than dorsals; each ventral anchor composed of: (1) a solid base provided with vestigial roots, (2) a solid point; shaft and point join in a continuous arc; length 24 (12–27), width of base 12 (11–14). Dorsal anchor of same general structure as ventral, but with addition of well-defined roots; length 18 (16–20), width of base 9 (8–10). Bases of each anchor pair joined together by a transverse bar, the bars articulated to each other in an unusual fashion (see *Discussion* section for details). Ventral bar of simple construction (Fig. 5) and mildly curved throughout its length; length 37 (35–40). Dorsal bar consists of three fused portions: a simple midregion and with a shelf-like structure at each end (Fig. 4); length 40 (37–42). Two bands of muscle tissue arise in the body proper, pass visibly through the peduncle and into the haptor, where each band attaches to one of the shelf-like projections of dorsal bar (Fig. 1). Hooks 14 in number (seven pairs), five pairs on ventral aspect of haptor, remaining two pairs on dorsal aspect. Hooks similar in shape and size; each composed of (1) a solid, elliptical base, (2) a poorly differentiated



FIGURES 1-8. Camera lucida illustrations of *Gussevstrema amacleithrium* n. gen., n. sp. 1, Whole mount, ventral view. 2, Ventral anchor. 3, Dorsal anchor. 4, Dorsal bar. 5, Ventral bar. 6, Hook. 7, Cirrus. 8, Accessory piece.

shaft, and (3) a sickle-shaped termination provided with an opposable piece (Fig. 6). Range of hook lengths 13 (12-14).

Copulatory complex composed of a tubular cirrus arranged in a coil of ca. $1\frac{1}{4}$ turns, and a simple, basally articulated accessory piece (Figs. 7, 8). Estimated length of cirrus 45; length of accessory piece 13 (12-14). Testis postovarian, much larger than ovary. Most of vas deferens ob-

scured by the heavy vitellaria. Vagina and seminal receptacle not observed with certainty, however, a non-sclerotized vaginal opening is apparently present to right of median line, posterior to copulatory complex.

Vitellaria very dense, the granules small and of uniform size. The granules become confluent: (1) in pharyngeal region, (2) between copulatory complex and ovary, and (3) in posterior region of body proper, just anterior to peduncle. Intestinal crura difficult to observe because of vitellaria, but the strong posterior confluency of vitellarial granules suggests the likelihood of a posterior confluency of the intestinal limbs.

Discussion: The haptoral bars of this parasite are joined to each other in a unique way. The articulations are five in number. On the dorsal aspects of the bars, four articulations are seen: two occur near the mid-regions of the bars while an additional junction occurs distally, near either end. The fifth juncture, located on the ventral surface of the bars, is apparently composed of either muscle or connective tissue; this connective is irregular in shape. The bars are near the same level in the haptor, but are separated sufficiently so that the bars can be referred to as being either ventral or dorsal in the haptor.

The haptor seems to be differentiated into two regions: a denser region located centrally, to which the anchors and bars attach, and a less dense region which we might term the "haptor proper."

As pointed out by Price (1967), only a few genera of the subfamily Ancyrocephalinae possess bars which are joined to each other. *Gussevstrema* is apparently most closely related to *Actinocleidus* Mueller, 1937 and to *Anchoradiscus* Mizelle, 1941. The present genus, however, is differentiated from these two genera by the manner of articulation of the bars and by the position of the bars in reference to the haptor. Although *Gussevstrema* possesses only two eyespots, whereas members of both *Actinocleidus* and *Anchoradiscus* possess four, this reduced number of eyespots is not deemed worthy of generic status in the present case. This decision is based upon the presence of what are apparently comprising granules in the anterior cephalic region; these granules might be the dissociated elements of an additional vestigial pair of eyespots. Although we do not employ host-parasite relationships as criteria for establishment of new taxa, we believe that one aspect should be pointed out. Both *Actinocleidus* and *Anchoradiscus* are found on freshwater fishes native to North America. *Terapon jarbua*, on the other hand, is quite cosmopolitan in distribution and survives as readily in a marine environment as in fresh water.

Etymology: The genus name is chosen to honor A. V. Gussev of the Zoological Institute of the Academy of Sciences of the U.S.S.R., in recognition of his work on monogenetic trematodes. The species name, *amacleithrium*, is a combination of two Greek words: *amá*, meaning "together" and *cleithr-*, meaning "bar," thus indicating the articulated nature of the haptoral bars.

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